WHAT IS CLAIMED IS:

1. A method for transmitting data units of a data stream, especially a multimedia data stream, from at least one transmitting facility to at least one receiving facility E_j ($j \geq 1$), in which method:

n data sets ($n \geq 2$) are sent with the aid of the at least one transmitting facility,

the sending of a first data set M_1 of the n data sets begins at a time t_1,

the first data set M_1 comprises all data units of the data stream,

the sending of at least one further data set M_k ($2 \leq k \leq n$) of the n data sets begins at a time t_k ($2 \leq k \leq n$),

the at least one further data set M_k comprises at least one part of the data units of the data stream, and

the n data sets are sent in such a manner that in the at least one receiving facility E_j, a reproduction of the data units of the data stream as predetermined time sequence of information, especially picture and/or sound information, can be begun at a starting time $t_k^A = t_k + \theta$ ($\theta > 0$) and ended at an ending time $t_k^E = t_k^A + \Delta t$, where θ is a period characteristic of the transmission of individual data units of the data stream from the at least one transmitting facility to the at least one receiving

facility E_j and/or processing of individual data units of the data stream and Δt is a period characteristic of the reproduction of all data units of the data stream as the predetermined time sequence of information,

wherein the at least one further data set M_k ($2 \leq k \leq n$) is formed from selected data units of the data stream for which an earlier transmission is begun at least once by the at least one transmitting facility in a time interval between a time t_{k-1} and the time t_k ($2 \leq k \leq n$), a time interval ($t_{k-1}-t_k$) being smaller than Δt for at least two of successive times t_k and t_{k+1} ($1 \leq k \leq n$).

2. The method according to claim 1, wherein an input of a user of the at least one receiving facility E_j for establishing the time t_1 and/or the time t_k ($2 \leq k \leq n$) is electronically detected, the input being transmitted to the at least one transmitting facility via a return data channel formed between the at least one transmitting facility and the at least one receiving facility E_m.

3. The method according to claim 1, wherein the time t_1 and/or the times t_k ($2 \leq k \leq n$) are predetermined at the transmitting end.

4. The method according to claim 1, wherein an essentially equal time interval is formed in each case between the times t_{k-1} and t_k ($2 \leq k \leq n$).

5. The method according to claim 1, wherein the data stream comprises x data units D_x ($x = 1,2, \ldots$), the transmitting between the at least one transmitting facility and the at least one receiving facility E_j ($j \geq 1$) is performed over a predetermined period which is divided into time intervals Δt_y ($y = 1,2, \ldots$), an mth data unit D_m ($1 \leq m \leq x$) being transmitted within each mth time interval Δt_m.

6. The method according to claim 1, wherein the data stream comprises x data units D_x ($x = 1,2, \ldots$), the transmitting between the at least one transmitting facility and the at least one receiving facility E_j ($j \geq 1$) is performed over a predetermined period which is divided into time intervals Δt_y ($y = 1,2, \ldots$), the sending of an mth data unit D_m ($1 \leq m \leq x$) being begun within each $(1 + p \cdot m)$-th time interval Δt_{1+pm} ($p \geq 0$) and extending over m time intervals $\Delta t_{1+pm} + \ldots + \Delta t_{m+pm}$.

7. The method according to claim 1, wherein the datastream comprises x data units D_x ($x = 1,2, \ldots$), the transmitting between the at least one transmitting facility and the at least one

receiving facility E_j ($j \geq 1$) is performed over a predetermined period which is divided into time intervals Δt_y ($y = 1,2, \ldots$), all mth data units D_m ($1 \leq m \leq x$) being sent in each mth time interval Δt_m when $m = 2^p$ ($p = 0, 1, 2, 3, \ldots$) and all hth data units D_h ($1 < h \leq x$), for which $2^k < h < 2^{z+1}$ ($z \geq 0$), exactly once between the 2^zth time interval and the 2^{z+1}th time interval.

8. The method according to claim 5, wherein the data units D_x of the data stream of a total data stream are comprised of data units D_{x^*} ($x^* = v + x$; $v \geq 1$), where v is a number of data units D_{x^*} of the total data stream which are conveyed to the at least one receiving facility E_j before the time t_1 so that the following holds true when the mth data unit D_m is sent:

$v < m \leq x^*$.

9. The method according to claim 6, wherein the data units D_x of the data stream of a total data stream are comprised of data units D_{x^*} ($x^* = v + x$; $v \geq 1$), where v is a number of data units D_{x^*} of the total data stream which are conveyed to the at least one receiving facility E_j before the time t_1 so that the following holds true when the mth data unit D_m is sent:

$v < m \leq x^*$.

10. The method according to claim 7, wherein the data units D_x of the data stream of a total data stream are comprised of data units D_{x^*} ($x^* = v + x$; $v \geq 1$), where v is a number of data units D_{x^*} of the total data stream which are conveyed to the at least one receiving facility E_j before the time t_1 so that the following holds true when the mth data unit D_m is sent: $v < m \leq x^*$.

11. The method according to claim 1, wherein a data unit D^E_x ($x = 1,2, \ldots$) of the data stream which is received by the at least one receiving facility E_j is reproduced with the aid of replay means at a replay time t^W_x ($x = 1,2, \ldots$) within the predetermined time sequence of information items, an mth data unit D_m of the data stream being sent in such a manner that an mth received data unit D^E_m ($1 \leq m \leq x$) comprising the transmitted mth data unit D_m is received by the at least one receiver facility E_j closely in time to a replay time t^W_m.

12. The method according to claim 1, wherein a data unit D^E_x ($x = 1,2, \ldots$) of the data stream which is received by the at least one receiving facility E_j is reproduced with the aid of replay means at a replay time t^W_x ($x = 1,2, \ldots$) within a predetermined time sequence of information items, an mth received data unit D^E_m ($1 \leq m \leq x$) received at a receiving time t^E being

a) transferred to the replay means when $t_E = t^W_m - \varepsilon$ ($\varepsilon > 0$), where ε is a characteristic time for transferring the mth received data unit D^E_m to the replay means and/or a conversion of the mth received data unit D^E_m for reproduction; or

b) stored in storage means of the at least one receiving facility E_j if $t_E < t^W_m - \varepsilon$ and the mth received data unit D^E_m is not yet stored in the storage means; or

c) discarded if $t_E > t^W_m - \varepsilon$ or the mth received data unit D^E_m is already stored in the storage means.

13. The method according to claim 1, wherein a data unit D^E_x ($x = 1,2, \ldots$) of the data stream which is received by the at least one receiving facility E_j is reproduced with the aid of replay means at a replay time t^W_x ($x = 1,2, \ldots$) within a predetermined time sequence of information items, an mth received data unit D^E_m ($1 \leq m \leq x$) received at a receiving time t^E being

a) transferred to the replay means when $t_E = t^W_m - \varepsilon$ ($\varepsilon > 0$), where ε is a characteristic time for transferring the mth received data unit D^E_m to the replay means and/or a conversion of the mth received data unit D^E_m for reproduction; or

b) stored in storage means of the at least one receiving facility E_j if $(t_E < (t^W_m - \varepsilon) < (t_E + \Delta t_{Mem}))$ and the mth received data unit D^E_m is not yet stored in the storage means, where Δt_{Mem} is a characteristic period for the reproduction of a part of the

received data units D^E_x and the storage capacity of the storage means is limited to the part of the received data units; or

c) discarded if $t_E > t^w_m - \varepsilon$ or the mth received data unit D^E_m is already stored in the storage means.

14. The method according to claim 1, wherein a data stream is at least partially transmitted as encrypted data stream.

15. The method according to claim 14, wherein the first data set M_1 and the at least one further data set M_k ($2 \leq k \leq n$) of the n data sets are transmitted in such a manner that during the reproduction of the data units in the at least one receiving facility E_j, data units which are transmitted unencrypted are reproduced for a predetermined starting period after the starting time $t_k^A = t_k + \theta$ ($\theta > 0$).

16. Transmitting device for transmitting data units of a data stream, especially a multimedia data stream, to at least one receiving facility E_j ($j \geq 1$), comprising transmitting means for transmitting the data units and control means for controlling the transmitting means, in such a manner that the data units of the data stream can be transmitted from at least one transmitting

facility to at least one receiving facility E_j ($j \geq 1$), in which method:

n data sets ($n \geq 2$) are sent with the aid of the at least one transmitting facility,

the sending of a first data set M_1 of the n data sets begins at a time t_1,

the first data set M_1 comprises all data units of the data stream,

the sending of at least one further data set M_k ($2 \leq k \leq n$) of the n data sets begins at a time t_k ($2 \leq k \leq n$),

the at least one further data set M_k comprises at least one part of the data units of the data stream, and

the n data sets are sent in such a manner that in the at least one receiving facility E_j, a reproduction of the data units of the data stream as predetermined time sequence of information, especially picture and/or sound information, can be begun at a starting time $t_k^A = t_k + \theta$ ($\theta > 0$) and ended at an ending time $t_k^E = t_k^A + \Delta t$, where θ is a period characteristic of the transmission of individual data units of the data stream from the at least one transmitting facility to the at least one receiving facility E_j and/or processing of individual data units of the data stream and Δt is a period characteristic of the reproduction of all data units of the data stream as the predetermined time sequence of information,

wherein the at least one further data set M_k ($2 \leq k \leq n$) is formed from selected data units of the data stream for which an earlier transmission is begun at least once by the at least one transmitting facility in a time interval between a time t_{k-1} and the time t_k ($2 \leq k \leq n$), a time interval (t_{k-1}-t_k) being smaller than Δt for at least two of successive times t_k and t_{k+1} ($1 \leq k \leq n$).

17. The transmitting device according to claim 16, wherein the transmitting means comprise at least two transmitters for transmitting the data units, the two transmitters being controllable with the aid of the control device in such a manner that a part of the data stream can be sent via one of the at least two transmitters and another part of the data stream can be sent via another one of the at least two transmitters.

18. The transmitting device according to claim 17, wherein the one part of the data stream comprises at least one data unit D_b ($b \leq x$) of the x data units D_x ($x = 1,2,3, \ldots$) and the other part of the data stream comprises data units D_1, ..., D_{b-1}, D_{b+1}, ..., D_x of the x data units D_x.